

Chapter 3 Models of Earth

3.1 Finding Locations on Earth

I. Latitude

A. Parallels - the set of circles that describe positions north or south of the equator; a line of latitude

360 / 40074 1. called parallels because they run east and west around the world parallel to the equator

B. Latitude - the angular distance north or south from the equator; expressed in degrees

1. Latitude is measured in degrees and the equator is designated 0° latitude

a. 1° latitude = $1/360$ of Earth's circumference
 1° latitude = 111 km

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b. labeled N + S in relation to equator

2. Minutes + seconds

a. each degree of latitude consists of 60 equal parts called minutes; 1 minute = 1.85 km

b. each minute consists of 60 seconds

II Longitude

A. Meridian - a semicircle that runs from pole to pole

1. one meridian selected to be the frame of reference called prime meridian (0°)

a. prime meridian (0°) is located in Greenwich England

B. Longitude - angular distance, measured in degrees, east or west of the prime meridian

C. Degrees of Longitude

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1. Because a circle is 360° , the meridian opposite the prime meridian is labeled 180°
 - a. locations E of prime meridian are $0^\circ - 180^\circ$ E
 " W " " " are $0^\circ - 180^\circ$ W
 2. Longitude has minutes + seconds like latitude
 - a. degrees > minutes > seconds
 - D. Distance between Meridians
 1. at the equator, a degree of longitude = 111 km
 - a. distance decreases as you move from equator to the poles
- ### III Great Circles

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- A. Great Circle - any circle that divides the globe into halves, or marks the circumference of the globe
 1. Any circle formed by 2 meridians of latitude that are directly across the globe from each other, is a great circle
- ### IV Finding Direction
- A. Compass or GPS; ways to find direction/location
 - B. Geomagnetic poles - the areas of Earth's surface just above where the poles of the imaginary magnet
 - C. Magnetic Declination - the angle between the direction of the geographic pole and the direction the compass needle points (Figure 5, p.56)

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D. Global Positioning System (GPS) - a satellite navigation system based on a global network of 24 satellites

3.1 HW tl 1-8 pg. 56
due Mon

Magnetic Declination Worksheet due Wed

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3.3 Types of Maps

I. Topographic Maps - one of the most widely used maps

A. Topo maps show natural features + elevation
1. Elevation - height above sea level

B. Advantages of Topo Maps

1. Show elevation, surface features (shape), and size of land mass

C. Elevation on Topographic Maps

1. Contour lines are used to show elevation of topo maps

a. Contour lines - lines that connect points of equal elevation on a map

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2. The difference between two contour lines is a contour interval
3. Relief - the difference in elevation between the highest and lowest point of the area being mapped
4. Cartographer - a person that makes maps

D. Land forms on Topographic Maps

1. The spacing and the direction of contour lines indicate the shapes of the landform on a topographic map

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2. A contour line that bends to form a V shape indicates a valley
3. Depression contours - closed loop contour lines that have a short, straight line perpendicular to the inside of the loop

E. Topographic Map Symbols - used to show certain features

1. Colors indicate the feature

II Geologic Maps

- A. Geologic Maps show the types of rocks found in an area

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- B. Geologic Maps are created on top of a map called a base map
- C. Rock units on a geologic map
 - 1. Geologic unit - a volume of a rock of a given age range and two rock types
- D. Other Structures on a Geologic Map
 - 1. Contact lines - indicates a place where two different geologic units meet (meeting points are called contacts)
 - a. two main types of contacts
 - faults and depositional

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- III Soil Maps
 - A. Scientists construct soil maps to classify, map, and describe soils
 - B. Soil maps are based on soil surveys
 - C. Soil surveys consist of three main parts
 - 1. Soil surveys generally include two types of soil maps
 - a. First map is a general map with approximate location of soil types
 - b. Second type - detailed information about the soils

- IV Other maps
 - A. Scientists also use maps to show the location and flow of both air + water
 - 1. Meteorologists use maps of radar data to inform weather forecasts

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